

IN THE MATTER OF:

Order No. 91-16

Approximately 640 Acres  
of Land Located in  
Section 19, Township 13N,  
Range 10W of the Bluewater USGS  
Quadrangle (A Portion of the  
Bluewater Uranium Mining Sites)

ADMINISTRATIVE ORDER  
PURSUANT TO SECTION 106  
OF THE COMPREHENSIVE  
ENVIRONMENTAL RESPONSE,  
COMPENSATION, AND  
LIABILITY ACT OF 1980  
as amended, 42 U.S.C.  
Section 9606(a)

**Respondents:**

The Cerrillos Land Company, the Santa Fe Pacific Railroad Company, and the Atchison, Topeka & Santa Fe Railway Company

## I. PREAMBLE

This Administrative Order (Order) is issued on this date to the above-referenced Respondents, pursuant to the authority vested in the President of the United States by Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Section 9606(a), as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499 (CERCLA), delegated to the Administrator of the United States Environmental Protection Agency (U.S. EPA) by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, further delegated to the EPA Regional Administrators by U.S. EPA Delegation Nos. 14-14-A and 14-14-B, and further redelegated to the Director, Hazardous Waste Management Division, by Region IX Delegations 1290.41 and 1290.42.

1       The State of New Mexico and the Navajo Nation have been  
2 notified of the issuance of this Order as required by Section  
3 106(a) of CERCLA, 42 U.S.C. Section 9606(a).

4       This Order requires the Respondents to undertake and com-  
5 plete removal activities to abate an imminent and substantial  
6 endangerment to the public health or welfare or the environment  
7 that may be presented by the actual or threatened release of  
8 hazardous substances from the above-referenced Site.

9                               **II. FINDINGS OF FACT**

10       Based on available information, including the Administrative  
11 Record established in this matter, the U.S. EPA hereby finds:

12   **A.   Site Description/Location**

13       The Bluewater Uranium Mining Sites consist of two nearby  
14 abandoned mining areas, the Brown-Vandever-Nanabah Mining Sites  
15 and the Navajo Desiderio Mine, which are located in the central  
16 portion of western New Mexico. The Brown-Vandever-Nanabah Mining  
17 Sites are located on four parcels of land, which include two In-  
18 dian Allotment parcels, one Federal parcel administered by the  
19 Department of Energy, and one privately owned parcel. All of  
20 these parcels lie within the Bluewater U.S. Geological Survey  
21 (USGS) Quadrangle.

22       The privately owned parcel of land which constitutes one of  
23 the four parcels at the Brown-Vandever-Nanabah Mining Sites, as  
24 indicated above, is the subject of this Administrative Order is-  
25 sued by the U.S. EPA. For ease of reference, the subject parcel  
26 will hereinafter be referred to as "the Site" or "the Facility."

27       The Site is located at the foot of Haystack Butte in Section  
28 19, Township 13N, Range 10W of the Bluewater Quadrangle, approx-

1 imately five miles west of Prewitt, New Mexico and 15 miles north  
2 of Grants, New Mexico. The elevation of the Site varies from  
3 6900 to 7100 feet above sea level. Haystack Butte, which lies  
4 approximately 1/2 mile to the North of the Site, peaks at 7833  
5 feet.

6 The climate at the Site is semi-arid, with an average annual  
7 precipitation of approximately 12 inches, occurring mostly in  
8 July and August. The average annual wind velocity is 10 mph.

9 No surface water exists on or around the Site. However,  
10 small arroyos cut the area with general drainage to the south-  
11 east. Groundwater aquifers lie far below any of the previously  
12 mined areas at the Site. There is no evidence that the ground-  
13 water has been affected, to date, by hazardous substances at the  
14 Site.

15 Geology locally consists of exposures of Jurassic Todilto  
16 limestone and Entrada sandstone at the northern border of the  
17 Site, and Basaltic Malpais to the southeast. Vegetation con-  
18 sists of sparse grassland, bounded approximately 1/2 mile to the  
19 north of the Site by pinyon-juniper woodlands. Wildlife species  
20 in the area are restricted to birds, reptiles, and small mammals  
21 characteristic of the pinyon-juniper and grassland habitats.

22 In the past, the land at the Site was used primarily for  
23 rangeland grazing and uranium mining. Reports indicate that min-  
24 ing operations at the Brown-Vandever-Nanabah Mining Sites were  
25 ceased in approximately 1981. Since that time, the land has been  
26 utilized primarily for the grazing of sheep and other animals.  
27 However, as a result of the previous mining operations at the  
28 Site, the topography of the land is still scarred by several

1 large abandoned uranium mine pits. In addition, uranium mine  
2 waste, overburden, and piles of protore (low grade uranium ore)  
3 remain present on the surface of the land at this time.

4 **B. Site History and Respondents**

5 1. As of 1950, when uranium was first discovered at the Site,  
6 the mineral rights to the Site (Section 19, Township 13N, Range  
7 10W) were held and controlled by the Santa Fe Pacific Railroad  
8 Company (SFPR).

9 2. SFPR owned the mineral rights to the Site for the period  
10 from 1951 to the the early 1980's. During this period of time,  
11 uranium mining operations were conducted at the Site, as  
12 specified in paragraphs 3, 6, 7, 8, 10, and 13 below.

13 3. From November 21, 1950, to September 30, 1952, SFPR con-  
14 ducted drilling, sampling, test pitting and other mining opera-  
15 tions at the Site.

16 4. According to the Mineral Leasing History and Corporate  
17 Chronology attached to a June 18, 1991 letter to EPA from Mr. Tim  
18 Leftwich, the Director of Environmental Quality for both the Cer-  
19 rillos Land Company (CLC) and the Santa Fe Pacific Minerals Cor-  
20 poration (SFPM), the Haystack Mountain Development Company was  
21 incorporated on October 15, 1951, as a subsidiary of the  
22 Atchison, Topeka & Santa Fe Railway.

23 5. From September 30, 1952 to November 30, 1961, SFPR formally  
24 leased the mineral rights to the Site to HMDC.

25 6. From September 30, 1952 to November 30, 1961, HMDC conducted  
26 mining operations at the Site pursuant to the above-referenced  
27 lease.

1 7. On April 19, 1960, SFPR entered into a separate contract  
2 with HMDC for construction work and other work, including the  
3 production of uranium ore, at the Site. This contract was ter-  
4 minated on December 1, 1961.

5 8. On December 1, 1961, SFPR entered into a similar contract  
6 with an individual named Henri T. Dole, for construction work and  
7 other work, including mining operations, at the Site. This con-  
8 tract remained in effect through December 1, 1967. Information  
9 made available to EPA indicates that Henri T. Dole may now be  
10 deceased.

11 9. From April 15, 1975 to February 1985, SFPR leased the  
12 mineral rights to several portions of the Site to an individual  
13 named George Warnock. In this lease agreement, SFPR acknowledged  
14 that:

15 a) SFPR was the former owner of the land (including surface  
16 rights) at the Site; and

17 b) Although SFPR had previously sold and conveyed its  
18 interest in the surface rights to the Site, the company  
19 had retained its property interest in the oil, gas, and  
20 mineral rights which were associated with that land.

21 10. Pursuant to this lease of Site mineral rights, Mr. Warnock  
22 conducted uranium exploration and mining activities at the Site,  
23 subject to the payment of both rent and royalties to SFPR, from  
24 April 15, 1975 to May 1977.

25 11. In an agreement on May 5, 1977, Mr. Warnock assigned his  
26 lease of Site mineral rights to the Todilto Exploration and  
27 Development Corporation (TEDC). The Lessor of the Site mineral  
28 rights, SFPR, consented to the assignment of the lease to TEDC.

12. As evidenced by the signatures on the Assignment of Lease document, George Warnock also served as President of TEDC, and his wife Dorothy served as the Secretary of that company.

13. Pursuant to the assignment of the above-referenced lease, TEDC conducted mining operations on a portion of the Site from May 1977 until approximately 1981.

14. In 1981, all ongoing mining operations at the Site were ceased.

15. On April 27, 1987, HMDC was merged into the Atchison, Topeka and Santa Fe Railway Company.

16. According to a July 1, 1991 letter from Mr. Tim Leftwich, the Director of Environmental Quality for the Cerrillos Land Company (CLC) to EPA Region IX, CLC is "the current owner of the mineral estate" for the Site.

17. As further indicated in the Corporate Chronology attached to the June 18, 1991 letter from Mr. Leftwich to EPA, CLC was incorporated on March 21, 1983, as a subsidiary of the newly incorporated Santa Fe Pacific Minerals Corporation (SFMC). The Santa Fe Pacific Minerals Corporation itself was incorporated on March 14, 1983, as a subsidiary of Santa Fe Industries, Inc.

18. As indicated in the Mineral Take Off attachment to the June 18, 1991 letter from Mr. Leftwich to EPA, the Cerrillos Land Company acquired its present interest in the mineral rights to the Site from SFPR through special warranty deed conveyances in September 1983, and in July and October 1986.

19. As indicated in the Current Pertinent Structure attachment to the June 18, 1991 letter from Mr. Leftwich to EPA, and confirmed by Wayne Jarke, the General Counsel for the Santa Fe

1 Pacific Minerals Corporation, in a telephone conversation with  
2 EPA representative Linda P. Wandres on July 26, 1991, the  
3 Atchison, Topeka and Santa Fe Railway Company, the Santa Fe  
4 Pacific Railroad Company, and the Santa Fe Pacific Minerals Cor-  
5 poration are now sister subsidiaries of Santa Fe Pacific  
6 Properties, Inc. Santa Fe Pacific Properties, Inc. is itself a  
7 subsidiary of the Santa Fe Pacific Corporation.

8 **C. Site Characteristics**

9 Several families live and work near the Site. Approximately  
10 forty people, including children, live within one quarter mile of  
11 the Site. As stated above, the Haystack Butte area, including  
12 Section 19, is utilized primarily as grazing land for local sheep  
13 herders. At the present time, there are no restrictions or bar-  
14 riers to prevent the local population or livestock from gaining  
15 access to the abandoned mine areas and mining wastes which remain  
16 at the Site. Throughout the year, local residents, sheep, and  
17 goats roam freely within the abandoned mine areas. In addition,  
18 the Agency for Toxic Substances and Disease Registry (ATSDR) has  
19 reported that local children occasionally play on and around the  
20 abandoned mine pits and the piles of mine waste at the Site.

21 **D. Incident/Release Characteristics**

22 On October 3, 1990, the Emergency Response Section (ERS) of  
23 the U.S. EPA was notified by the ATSDR of potential health  
24 hazards which the Agency had determined may be associated with  
25 the abandoned uranium mines at the Brown-Vandever-Nanabah and  
26 Desiderio Mining Sites in the Bluewater USGS quadrangle.  
27 Specifically, ATSDR concluded that the Bluewater Mining Sites may  
28 pose a significant health hazard to the local population because

1 of the presence of radioactive mine waste and protore on and  
2 about the Sites, physical hazards at the Sites, and the potential  
3 for heavy metal contamination in the vicinity of the abandoned  
4 mines. As a result of its investigation, ATSDR issued a Public  
5 Health Advisory concerning the Bluewater Sites (including the  
6 Site subject to this Order) pursuant to Section 104(i)(6)(H) of  
7 CERCLA.

8 EPA Region IX's ERS was tasked to assess the present radio-  
9 logical and geochemical conditions at the Bluewater Sites, to  
10 determine whether an emergency response action was warranted to  
11 control the actual or threatened release of hazardous substances  
12 at the Sites. On November 15-16, 1990, the ERS staff (assisted  
13 by members of the EPA Office of Air and Radiation) conducted a  
14 field gamma survey and collected water and soil samples on and  
15 about the Brown-Vandever-Nanabah and Desiderio Mining Sites,  
16 including the Site which is the subject of this Order.

17 In order to assess the conditions present at the Site sub-  
18 ject to this Order, the ERS staff (using standard radiation  
19 detection equipment [Ludlum 19]), first obtained background  
20 radiation measurements at a distance of 2.5 miles, 1.0 mile and  
21 approximately 0.5 mile from the Site. Thereafter, the ERS staff  
22 took radiation readings at several sampling locations within the  
23 immediate vicinity of the Site (See Attachment A, Preliminary  
24 Data). Measurements were taken at both ground level and at waist  
25 level. Waist level measurements are indicative of human exposure  
26 levels, whereas the contact measurements taken at ground level  
27 suggest the emission rate of the radioactive materials from the  
28 soil.



Ground level background readings obtained by the EPA staff ranged from 11 microroentgens per hour (uR/hr) to 15 uR/hr, while waist level background readings ranged from 11 uR/hr to 13 uR/hr. Within the immediate vicinity of the Site, the net waist level (background subtracted) radiation levels ranged from 20 uR/hr to over 750 uR/hr. On ground contact, the maximum on-Site radiation level was recorded at 1,225 uR/hr. Elevated concentrations of radium (Ra-226/228) and uranium isotopes (U-223/234/235/238) were also detected in soils located on-Site. The maximum levels detected for radioisotopes in surface soils at the Site (within the top 15 centimeters of soil) were recorded for radium, which was measured in excess of 260 picocuries per gram of soil (pCi/g), and for uranium species, which were measured at more than 300 pCi/g. Soil samples which were analyzed for heavy metal contamination did not reveal any significant amount of contamination.

#### **E. Threats to Public Health and Welfare**

##### **1. Removal Cleanup Standard**

Radiation is a known carcinogen, mutagen and teratogen. Exposure to elevated gamma radiation is known to cause cancer, cataracts, and shorten the life span of affected individuals. As indicated above, elevated radionuclide levels are present in both the soil and waste materials found at the Site. These radionuclides have been found to emit radiation at levels which may present a danger to individuals in the vicinity of the Site. Uranium and several of its decay daughters are alpha emitters. The inhalation of radionuclides that are alpha emitters exposes an affected individual's internal organs to damaging alpha par-

1 ticles. Once ingested, alpha particles become trapped within the  
2 body, and can thereby cause severe organ damage as well as cer-  
3 tain genetic defects.

4 The National Council on Radiation Protection and Measure-  
5 ments (NCRP) Report 91 (1987), "Recommendations on Limits for  
6 Exposure to Ionizing Radiation," recommends the adoption of a  
7 limit for continuous or frequent exposure to radiation, at a  
8 100 mrem/yr effective dose equivalent (EDE) from all radiation  
9 sources (including external as well as internal sources). The  
10 NCRP report also recommends that a limit of 500 mrem/yr be esta-  
11 blished for infrequent or "short term" exposure. In accordance  
12 with the above-referenced NCRP Guidelines, EPA's Office of Air  
13 and Radiation (OAR) has concurred with Region IX's Action  
14 Memorandum for the Bluewater Sites, which recommends that a limit  
15 of <100 mrem/yr of excess gamma radiation be adopted as a stan-  
16 dard in this case, to ensure that the affected population is not  
17 exposed to radiation levels in excess of the 500 mrem/yr effec-  
18 tive dose equivalent from all sources.

19 For the purpose of the response action to be conducted at  
20 the Site, EPA has estimated that the population in question (on  
21 the average) spends two (2) hours per day in areas which have  
22 been affected by the mining operations at the Site, for ap-  
23 proximately 300 days out of each year. Based on this estimate,  
24 it appears that the population and livestock in the immediate  
25 vicinity of the Site which are being exposed to gamma radiation  
26 levels of 180 uR/hr or greater (165 uR/hr above background) are  
27 receiving radiation exposure in excess of the levels recommended  
28 by Region IX and the EPA Office of Air and Radiation.

1 The risk level at the Site has been calculated using the follow-  
 2 ing formula:

$$\begin{aligned} 3 & (180 \text{ uR/hr} - 15 \text{ uR/hr}) * 2 \text{ hr} * 300 \text{ days/yr} = 99,000 \text{ uR/yr} \\ 4 & 99,000 \text{ uR/yr} = 99 \text{ mR/yr} = 99 \text{ mrem/yr} \end{aligned}$$

#### 5 **F. Threats to the Environment**

6 In addition to the threat which the Site currently poses to  
 7 human health, the elevated emissions of gamma radiation from the  
 8 radionuclides which are present in the soil and other materials  
 9 at the Site may adversely effect the local biota and wildlife.  
 10 Moreover, since the land is being utilized primarily for grazing  
 11 at the present time, the radionuclides may be entering the food  
 12 chain, as the grazing livestock ingest the contaminated biota.  
 13 Over a period of time, this food chain link may also have  
 14 deleterious consequences for the individuals who frequently eat  
 15 animals which have grazed in the vicinity of the Site.

### 16 **III. CONCLUSIONS OF LAW**

17 Based on the foregoing Findings of Fact, the U.S. EPA has  
 18 concluded as follows:

19 **A.** The portion of the Bluewater Uranium Mining Sites which  
 20 is the subject of this Order (the "Site"), which is located in  
 21 Section 19, Township 13N, Range 10W of the Bluewater Quadrangle,  
 22 is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C.  
 23 Section 9601(9).

24 **B.** Each named Respondent is a "person" as defined by Section  
 25 101(21) of CERCLA, 42 U.S.C. Section 9601(21).

26 **C.** The Cerrillos Land Company is the present "owner" of a  
 27 property interest in the Site, as defined by Section 101(20) of  
 28 CERCLA, 42 U.S.C. Section 9601(20).

1           D. The Santa Fe Pacific Railroad Company is an "owner" at  
2 the time of disposal of a property interest in the Site, as  
3 defined by Section 101(20) of CERCLA, 42 U.S.C. Section 9601(20).

4           E. The Atchison, Topeka & Santa Fe Railway Company is a  
5 parent and successor corporation to the Haystack Mountain  
6 Development Company, and is therefore an "operator" at the time  
7 of disposal of the Site, as defined by Section 101(20) of CERCLA,  
8 42 U.S.C. Section 9601(20).

9           F. The above-named Respondents are therefore liable persons  
10 with respect to the Site, pursuant to Section 107(a) of CERCLA,  
11 42 U.S.C. Section 9607(a).

12           G. Radionuclides are "hazardous substances" as defined by  
13 Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14), and Sec-  
14 tion 302.4 of the National Contingency Plan (NCP), 40 CFR Part  
15 300.

16           H. The presence of elevated radionuclide concentrations at  
17 the above-referenced Site, and the potential for those substances  
18 to migrate, constitutes an actual or threatened "release" of haz-  
19 ardous substances into the environment, as defined by Section  
20 101(22) of CERCLA, 42 U.S.C. Section 9601(22).

#### 21                           IV. DETERMINATIONS

22           Based on the Findings of Fact and Conclusions of Law stated  
23 above, the Director, Hazardous Waste Management Division, EPA  
24 Region IX, has made the following determinations:

25           A. The actual or threatened release of hazardous substances  
26 from the Facility subject to this Order may present an imminent  
27 and substantial endangerment to the public health or welfare or  
28 the environment.

1           **B. Specifically, the conditions present at the Facility**  
2       constitute a threat to public health or welfare or the environ-  
3       ment based upon consideration of the factors set forth in the Na-  
4       tional Contingency Plan, at 40 CFR Section 300.415(b). These  
5       factors include, but are not limited to, the following:

6           **1. Actual or potential exposure to hazardous substances**  
7           **by nearby populations, animals, or food chain:**

8           As indicated above, approximately forty people, including  
9       children, reside within an approximate one half mile radius of  
10      the Site. If immediate action is not taken to control the  
11      release of hazardous substances at the Site, the local population  
12      may be exposed to dangerous doses of gamma radiation and elevated  
13      concentrations of radionuclides. As indicated in Section II.F.1  
14      of this Order, constant or frequent exposure to elevated gamma  
15      radiation emitted from radionuclides is known to cause cancer,  
16      life span shortening and cataracts in affected individuals.

17           **2. High levels of hazardous substances in soils largely at**  
18           **or near the surface that may migrate:**

19           EPA has determined that the soils which are present within  
20      the boundaries of the Site contain elevated concentrations of  
21      radionuclides. These hazardous substances may migrate from the  
22      surface soils at the Site as a result of high winds in the im-  
23      mediate vicinity. The inhalation of airborne radionuclides ex-  
24      poses the internal organs of exposed persons to damaging alpha  
25      particles. Uranium and several of its decay daughters are alpha  
26      radiation emitters. Once ingested, an alpha particle becomes  
27      trapped within the body and can thereby cause severe organ damage  
28      as well as certain types of genetic defects. Radionuclides  
29      present in surface soils may also migrate as a result of their  
30      exposure to flash flood waters and surface runoff. Finally, in-  
31      creased radiation emissions may result from elevated radionuclide  
32      concentrations at the Site. Such radiation is a known car-  
33      cinogen, mutagen and teratogen.

34           **3. Weather conditions that may cause hazardous substances**  
35           **to migrate or be released:**

36           Although the area in the vicinity of the Site is relatively  
37      dry during the majority of the year, the Bluewater District is  
38      subject to severe seasonal thunderstorms, high winds, and flash  
39      flooding. As a result, the mine wastes which remain present on  
40      the surface of the land are slowly being broken down and trans-  
41      ported, by both alluvial and fluvial forces.

1           C. In order to prevent or mitigate immediate and sig-  
2 nificant risk of harm to the public health, welfare and the en-  
3 vironment, it is necessary that actions be taken immediately to  
4 contain and prevent the release and potential release of hazard-  
5 ous substances from the Site.

6           D. The actions required by this Order, if properly per-  
7 formed, are consistent with CERCLA and the National Contingency  
8 Plan (NCP), 40 CFR Part 300, and are necessary and appropriate to  
9 protect the public health or welfare or the environment from the  
10 release of hazardous substances from the Site.

#### 11                           V. ORDER

12           Based upon the foregoing Findings of Fact, Conclusions of  
13 Law, and Determinations, and pursuant to Section 106(a) of  
14 CERCLA, 42 U.S.C. Section 9606(a), it is hereby Ordered that  
15 Respondents undertake the following actions with regard to the  
16 Site, under the direction of EPA's On-Scene Coordinator:

17           A. Within twenty-one (21) calendar days after the effective  
18 date of this Order, the Respondents shall submit in writing, for  
19 EPA review and approval, a Site Stabilization Plan and Schedule  
20 (Work Plan). The Work Plan shall provide a concise description  
21 of the removal activities which are to be conducted pursuant to  
22 this Order, as set forth below. Pursuant to the Work Plan, the  
23 Ordered activities shall be implemented and completed in accor-  
24 dance with the time frames specified in this Section:

- 25           1. Within thirty-five (35) calendar days after the effective  
26 date of this Order, the Respondents shall conduct a  
27 field gamma survey to define and delineate all areas  
28 within the Site which exceed 180 microroentgens an hour  
(uR/hr) (165 uR/hr above background) at ground level.  
The Work Plan shall contain specific information on how  
the gamma survey will be conducted, grid specification,  
the type of instruments planned to be utilized, and the

1           qualifications of the surveyors. All sampling and  
2           analysis shall be consistent with the "Removal Program  
3           Quality Assurance/Quality Control Interim Guidance:  
4           Sampling, QA/QC Plan and Data Validation," EPA OSWER  
5           Directive 9360.4-01, dated February 2, 1989.

6           2. Within sixty (60) calendar days after the effective  
7           date of this Order, the Respondents shall effectively  
8           reduce radiation emissions from all mine waste piles and  
9           areas where mining has exposed the uranium rich lime-  
10          stone, where recorded gamma emissions have been found to  
11          exceed 180 uR/hr at ground level (165 uR/hr above  
12          background). The radiation emissions from these piles  
13          and mined surfaces shall be reduced to a level below 180  
14          uR/hr. The proposed response actions to reduce these  
15          radiation emissions must be able to withstand erosion and  
16          chemical weathering (revegetation or the equivalent).  
17          The Work Plan shall provide adequate information and  
18          details on how the gamma radiation levels will be reduced  
19          by the proposed action, on specific site operation  
20          procedures, on the type of equipment which the Respon-  
21          dents plan to utilize during the proposed action, and on  
22          the qualifications of the personnel to be employed or  
23          otherwise retained by the Respondents to perform the  
24          Ordered activities.

25          3. Within sixty (60) calendar days after the effective date  
26          of this Order, the Respondents shall post signs in  
27          English, Spanish and Navajo warning the local residents  
28          of the potential radiological hazards associated with  
29          the Site.

30          The Work Plan submitted by the Respondents shall be reviewed  
31          by the U.S. EPA, which may approve, disapprove, require revi-  
32          sions, or modify the Work Plan. If EPA provides comments to the  
33          Respondents on the proposed Work Plan, the Respondents shall in-  
34          corporate all of EPA's comments and resubmit the plan to EPA  
35          within seven (7) calendar days after receiving any such comments.

36          Once EPA has approved the Work Plan, the Respondents shall  
37          promptly commence implementation of the Plan as approved by EPA.  
38          Failure of the Respondents to promptly and properly implement all  
39          aspects of the Work Plan as approved shall be deemed to be a  
40          violation of the terms of this Order.

1       The EPA approved Work Plan shall be deemed to be incor-  
2       porated into this Order by reference, and thus, shall be fully  
3       enforceable under the terms of this Order.

4       The Work Plan and other documents submitted by the Respon-  
5       dents shall demonstrate that the Respondents can properly and  
6       effectively conduct the response actions required by this Order.

7       B. Within twenty-one (21) calendar days after the effective  
8       date of this Order, the Respondents shall submit in writing, for  
9       EPA review and approval, a Site Health and Safety Plan. The Site  
10      Health and Safety Plan shall include necessary provisions to  
11      protect the health and safety of Site workers and neighboring  
12      residents, and shall be approved by a qualified Health Physicist.  
13      The Site Health and Safety Plan shall be prepared in accordance  
14      with EPA's Standard Operating Safety Guide, dated November 1984,  
15      and updated July 1988, and with the Occupational Safety and  
16      Health Administration (OSHA) regulations contained in 29 CFR Part  
17      120, which are applicable to Hazardous Waste Operations and Emer-  
18      gency Response Actions.

19      If EPA provides comments to the Respondents on the Site  
20      Health and Safety Plan, the Respondents shall incorporate all of  
21      EPA's comments and resubmit the plan to EPA within seven (7)  
22      calendar days of receiving any such comments.

23      C. Within thirty-four (34) calendar days after the effective  
24      date of this Order, the Respondents shall submit in writing, for  
25      EPA review and approval, a Post-Response Sampling Plan to ensure  
26      that all gamma radiation emission levels recorded within the  
27      boundaries of the Site following the completion of this removal  
28



1 action are below the above-referenced limit of 180 uR/hr (165  
2 uR/hr above background).

3 D. Within five (5) calendar days following the completion of  
4 the initial gamma radiation survey at the Site, the Respondents  
5 shall submit to EPA for review and approval copies of the field  
6 data which the Respondents have obtained during their initial  
7 survey of Site conditions, including a map delineating the survey  
8 points, documentation on instrument calibrations, and a summary  
9 of the procedures utilized by the Respondents and the findings  
10 which they obtained during the initial survey. After EPA has ap-  
11 proved the results of the initial gamma survey, the Respondents  
12 shall proceed in implementing the remaining tasks specified in  
13 the approved Work Plan.

14 E. During the implementation of the Work Plan and the Sam-  
15 pling Plan, the Respondents shall provide written weekly summary  
16 reports to the EPA On-Scene Coordinator. These weekly reports  
17 shall contain a summary of the previous week's activities and  
18 planned upcoming events.

19 F. The Respondents shall provide notice to EPA at least  
20 forty-eight (48) hours prior to performance of any on-Site work.

21 G. At the conclusion of the Post-Response Sampling acti-  
22 vities, the Respondents shall prepare a final report summarizing  
23 the work which they have conducted at the Site pursuant to this  
24 Order. The final report shall contain, at a minimum: identifica-  
25 tion of the Facility; a description of the locations and types of  
26 hazardous substances encountered at the Facility upon the initia-  
27 tion of work performed under this Order; a chronology and  
28 description of the actions performed (including both the

1 organization and implementation of response activities); a list-  
2 ing of the resources committed to perform the work under this Or-  
3 der (including financial, personnel, mechanical and technological  
4 resources); identification of all items that affected the actions  
5 performed under the Order, and a discussion of how all problems  
6 were resolved; and a presentation of the analytical results of  
7 all sampling and analyses performed (including all materials re-  
8 lated to the Post-Response gamma survey), and accompanying appen-  
9 dices containing all relevant paperwork accrued or used during  
10 the action (e.g., Site maps, instrument calibration data,  
11 invoices, bills, contracts, permits, and Site personnel  
12 information).

13 In addition, the final report shall include an affidavit  
14 from a person who supervised or directed the preparation of that  
15 report. The affidavit shall certify under penalty of law that  
16 based on the affiant's personal knowledge and appropriate in-  
17 quiries of all other persons involved in the preparation of the  
18 report, the information submitted is true, accurate, and complete  
19 to the best of the affiant's knowledge and belief.

20 The final report shall be submitted to EPA no later than  
21 fourteen (14) calendar days following the termination of the  
22 response action at the Site.

23 **H.** The Respondents shall retain a contractor which is  
24 qualified to undertake and complete the requirements of this  
25 Order, and shall notify the U.S. EPA of the name of such contrac-  
26 tor, within twenty-one (21) calendar days after the effective  
27 date of this Order (within the timeframe specified above for sub-  
28 mittal of the Work Plan for Site activities). EPA retains the

1 right to disapprove of any, or all, of the contractors and/or  
2 subcontractors which the Respondents may seek to retain. In the  
3 event that EPA disapproves of a selected contractor, the Respon-  
4 dents shall retain a different contractor to perform the Ordered  
5 work within seven (7) calendar days following EPA's disapproval  
6 of the Respondents' initial contractor selection.

7 I. Any materials containing hazardous substances, pol-  
8 lutants, or contaminants which are removed from the Site pursuant  
9 to actions required under this Order shall be disposed of or  
10 treated at a facility approved by the EPA On-Scene Coordinator,  
11 and in accordance with the requirements of the Resource Conserva-  
12 tion and Recovery Act of 1976 (RCRA), 42 U.S.C. Section 9601, et  
13 seq., as amended, the U.S. EPA Revised Off-Site Policy, and all  
14 other applicable Federal, State, and local requirements.

15 J. The Respondents shall designate a Project Coordinator for  
16 the work to be performed at the Site. To the greatest extent  
17 possible, the Project Coordinator shall be present on-Site, or be  
18 otherwise readily available, during the performance of response  
19 activities at the Site. The U.S. EPA has designated Robert E.  
20 Bornstein as its On-Scene Coordinator (OSC) for the Site. All  
21 relevant correspondence, reports, and documents should be sub-  
22 mitted to the EPA On-Scene Coordinator at the following address:

23 Robert E. Bornstein, OSC  
24 Emergency Response Section (H-8-3)  
25 U.S. EPA  
26 Region IX  
27 75 Hawthorne Street  
28 San Francisco, CA 94105

The On-Scene Coordinator and the Respondents' Project Coordinator  
shall be responsible for overseeing the implementation of this

1 Order. To the maximum extent possible, and unless otherwise  
2 specified in this Order, communication between the Respondents  
3 and the U.S. EPA, and all documents, reports, approvals, and cor-  
4 respondence concerning the response activities to be performed  
5 pursuant to this Order, shall be directed through the EPA On-  
6 Scene Coordinator and the Respondents' Project Coordinator.

7 K. The U.S. EPA and the Respondents shall each have the  
8 right to change their designated Coordinator for the response ac-  
9 tivities conducted at the Site. The U.S. EPA shall notify the  
10 Respondents, and the Respondents shall notify EPA, as early as  
11 possible before such a change is made. However, in no event  
12 shall less than 24 hours' notice be provided for such a change.  
13 While verbal notification may be provided initially for a change  
14 in the designated Coordinator under this provision, such  
15 notification shall be confirmed promptly in writing.

16 L. The U.S. EPA On-Scene Coordinator shall have the  
17 authority vested in an On-Scene Coordinator by the NCP, 40 CFR  
18 Part 300, as amended, including the authority to halt, conduct,  
19 or direct any work required by this Order, and to direct any  
20 other response action to be undertaken by the U.S. EPA or the  
21 Respondents at the Facility subject to this Order. All instruc-  
22 tions given by the EPA On-Scene Coordinator or his designated  
23 alternate shall be binding upon the Respondents as long as those  
24 instructions are not clearly inconsistent with the provisions of  
25 the National Contingency Plan.

26 M. No extensions shall be granted to the timeframes set  
27 forth for the performance of specific response actions pursuant  
28 to this Order without sufficient cause. All such extensions must

1 be requested by the Respondents in writing, and shall not be  
2 deemed to be accepted unless EPA has approved such an extension  
3 in writing.

4 N. To the extent that the Facility subject to this Order, or  
5 other nearby areas where work must be performed pursuant to this  
6 Order, is owned, leased, or possessed by person(s) other than the  
7 Respondents, it is the responsibility of the Respondents to ob-  
8 tain access to and use of any such areas, in order to carry out  
9 the terms of this Order. Accordingly, it is the responsibility  
10 of the Respondents to obtain all necessary access agreements to  
11 enable them to perform the Ordered work at the Site. In the  
12 event that the Respondents are unable to obtain access to por-  
13 tions of the Site or surrounding lands, despite having used their  
14 best efforts to do so, the Respondents shall immediately notify  
15 the U.S. EPA.

16 O. The Respondents shall provide U.S. EPA employees, con-  
17 tractors, agents, and other representatives with unrestricted ac-  
18 cess to the Facility at all reasonable times, and shall permit  
19 all such persons to be present on and to move freely in the area  
20 subject to this Order, to conduct inspections on the subject  
21 land, including taking photographs and videotapes of the  
22 Facility, to perform necessary cleanup and site stabilization  
23 work, to take samples at the Site, to monitor the work performed  
24 by Respondents pursuant to this Order, and to conduct other such  
25 activities as the U.S. EPA determines are necessary at the Site.  
26 Nothing in this Order shall limit any access rights that EPA or  
27 other governmental agencies may have pursuant to law.

28

1           P. Nothing contained herein shall be construed to prevent  
2 the U.S. EPA from seeking legal or equitable relief to enforce  
3 the terms of this Order, or from taking other legal or equitable  
4 action as it deems necessary and appropriate, or from requiring  
5 the Respondents in the future to perform additional response  
6 activities pursuant to CERCLA, 42 U.S.C. Section 9601, et seq.,  
7 or any other applicable law.

8           Q. If any provision of this Order is deemed to be invalid or  
9 unenforceable, the balance of the Order shall remain in full  
10 force and effect.

#### 11                           VI. COMPLIANCE WITH OTHER LAWS

12           The Respondents shall comply with all applicable federal,  
13 state and local laws and regulations in carrying out the terms of  
14 this Order. As indicated above, all hazardous substances removed  
15 from the Site must be handled in accordance with the Resource  
16 Conservation and Recovery Act of 1976, 42 U.S.C. Section 6921, et  
17 seq., the regulations promulgated under that Act, and Section  
18 121(d)(3) of CERCLA, 42 U.S.C. Section 9621(d)(3).

#### 19                           VII. ENDANGERMENT DURING IMPLEMENTATION

20           The Director, Hazardous Waste Management Division, EPA  
21 Region 9, may determine that acts or circumstances (whether re-  
22 lated to or unrelated to this Order) may endanger human health,  
23 welfare or the environment, and as a result of this determina-  
24 tion, may order the Respondents to stop further implementation  
25 of this Order until the endangerment is abated.

#### 26                           VIII. GOVERNMENT NOT LIABLE

27           The United States Government and its employees and other  
28 representatives shall not be liable for any injuries or damages

1 to persons or property resulting from the acts or omissions of  
2 the Respondents, their employees, contractors, or other represen-  
3 tatives caused by carrying out this Order. For the purposes of  
4 this Order, the United States Government is not a party to any  
5 contract with the Respondents.

#### 6 **VIX. PENALTIES FOR NONCOMPLIANCE**

7 A. The Respondents are advised that pursuant to Section  
8 106(b) of CERCLA, 42 U.S.C. Section 9606(b), a willful violation  
9 or failure or refusal to comply with this Order may subject the  
10 Respondents to a civil penalty of up to \$25,000 per day for each  
11 day in which the violation occurs or failure to comply continues.  
12 Failure to comply with this Order, or any portion thereof,  
13 without sufficient cause may also subject the Respondents to  
14 liability for punitive damages of up to three times the total  
15 cost incurred by the United States as a result of the Respon-  
16 dents' failure to take proper response action with regard to the  
17 Site, pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. Section  
18 9607(c)(3).

19 B. EPA may take over the response action at any time if EPA  
20 determines that the Respondents are not taking appropriate action  
21 in accordance with this Order. EPA may order additional actions  
22 as it deems necessary in order to protect the public health, wel-  
23 fare, or the environment from the release of hazardous substances  
24 at the Site. In this regard, the Respondents are advised that  
25 they may be found to be liable under Section 107(a) of CERCLA, 42  
26 U.S.C. Section 9607(a), for any and all costs incurred by the  
27 government in performing such additional response actions at the  
28 Site.

**X. OPPORTUNITY TO CONFER**

With respect to the actions required above, the Respondents may, within seven (7) calendar days following the issuance of this Order, request a conference with the U.S. EPA to discuss the provisions of the Order. Any such conference shall be held within fourteen (14) calendar days from the date of the Respondents' request, unless the timeframe for the conference has been extended by mutual agreement of the parties. At any conference held pursuant to the Respondents' request, the Respondents may appear in person, or be represented by an attorney or other representative. If any Respondent desires such a conference, the Respondent shall contact Linda P. Wandres, Assistant Regional Counsel, at (415) 744-1359, within the timeframe stated above.

If such a conference is held, Respondents may present any evidence, arguments, comments, or objections which they may have regarding this Order, its applicability to the Respondents, any factual determinations upon which the Order is based, the appropriateness of any action which the Respondents are being ordered to perform, or any other relevant and material issue regarding the Order. Any such evidence, arguments, comments, or objections should be reduced to writing and submitted to the U.S. EPA within seven (7) calendar days following the scheduled conference.

**XI. PARTIES BOUND**

The provisions of this Order and the directions of the U.S. EPA On-Scene Coordinator shall apply to and are binding upon the Respondents, their officers, directors, agents, employees, contractors, successors, and assigns.



**XII. NOTICE OF INTENTION TO COMPLY**

On or before three (3) calendar days of receipt of this Order, the Respondents shall provide notice, verbally or in writing, to U.S. EPA stating their intention to comply with all of the terms set forth in this Order. Verbal notification must be followed in writing within two (2) calendar days. Such written notice shall be provided to the Director, Hazardous Waste Management Division, at the following address:

Jeff Zelikson, Director  
Hazardous Waste Management Division (H-1)  
United States Environmental Protection Agency  
75 Hawthorne Street  
San Francisco, CA 94105

In the event that any Respondent fails to provide such notice, that Respondent shall be deemed not to have complies with the terms of this Order.

**XIII. RECORD RETENTION**

The Respondents shall retain copies of all records and files which relate to hazardous substances found on the Site for six (6) years following the completion of the activities required by this Order. The Respondents shall further make such records and files available to the U.S. EPA prior to the termination of the removal activities to be performed pursuant to this Order.

**XIV. ACCESS TO ADMINISTRATIVE RECORD**

The Administrative Record which has been compiled by EPA in connection with this matter, and which supports the selection of the response action, is available for review on normal business days between the hours of 9:00 a.m. and 5:00 p.m., in the Office of Regional Counsel, United States Environmental Protection

1 Agency, Region IX, 75 Hawthorne Street, San Francisco, California  
 2 94105. In addition, a copy of the Administrative Record will be  
 3 made available within sixty (60) calendar days following the in-  
 4 itiation of response activities pursuant to this Order in a  
 5 designated public repository within the vicinity of the Site.  
 6 Please contact Linda P. Wandres, the EPA Assistant Regional Coun-  
 7 sel assigned to this matter, at (415)-744-1359 if you wish to  
 8 review the Administrative Record in this case. A preliminary in-  
 9 dex of the Administrative Record is attached to this Order  
 10 (Attachment B) for your review.

#### 11 **XV. EFFECTIVE DATE**

12 Notwithstanding any conferences requested pursuant to the  
 13 provisions of this Order, this Order shall be effective upon the  
 14 date of execution by the Director, Hazardous Waste Management  
 15 Division, EPA Region IX, and all times for performance shall be  
 16 calculated from that date. If a conference is requested by the  
 17 Respondents, the Order shall be effective on the seventh (7th)  
 18 calendar day following the date of the conference, unless EPA has  
 19 agreed in writing to modify the effective date of the Order.

20 IT IS ORDERED on this 29<sup>th</sup> day of July 1991.

21 UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

22 By: Jeff Zelikson  
 23 Jeff Zelikson, Director  
 24 Hazardous Waste Management Division  
 25 United States Environmental Protection Agency  
 26 Region IX  
 27  
 28

1   **Contacts:**

2   Robert E. Bornstein  
3   On-Scene Coordinator  
4   Emergency Response Section (H-8-3)  
5   United States Environmental Protection Agency  
6   Region IX  
7   75 Hawthorne Street  
8   San Francisco, CA 94105  
9   (415) 744-2298

10   William J. Weis III  
11   Investigations and Enforcement  
12   Emergency Response Section (H-8-3)  
13   United States Environmental Protection Agency  
14   Region IX  
15   75 Hawthorne Street  
16   San Francisco, CA 94105  
17   (415) 744-2297

18   Linda P. Wandres  
19   Assistant Regional Counsel  
20   Office of Regional Counsel (RC-3)  
21   United States Environmental Protection Agency  
22   Region IX  
23   75 Hawthorne Street  
24   San Francisco, CA 94105  
25   (415) 744-1359

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**ATTACHMENT A**  
**GAMMA RADIATION SURVEY DATA**  
**BROWN-VANDEVER MINE SITE, NAVAJO NATION**

**SECTION 19**

NOVEMBER 14-15, 1990

Operator - Collen Petullo      Recorder - Robert Bornstein  
Instrument      ID#      Calibration date      Calibration Source  
1 Ludlum 19      452663      11-08-90      Ra-226  
2 Bicron      825481      10-15-90      Cs-137  
3 Ludlum 12      140830      11-08-90      Pu-239, Sr-90  
Pancake

Date 11/14/90      SECTION 19

Inst.	Time	Station	Ground	Waist	Comments
1 3	0900 0903	Background1	11 uR/hr 100 cpm	11 uR/hr 100 cpm	2.5 mi from site.
1 3	0908 0910	Background2	11 uR/hr 100 cpm	11 uR/hr 100 cpm	1.0 mi from site.
1	0930	Brown Home	13 uR/hr	14 uR/hr	stage area
1 2	1000 1001	Station 1	35 uR/hr 25 urem/hr	36 uR/hr 25 urem/hr	Center of dirt road
1 2	1003 1004	Station 2	130 uR/hr 70 urem/hr	135 uR/hr 60 urem/hr	near tree
1 2	1007 1008	Station 3	90 uR/hr 50 urem/hr	N/A N/A	contact on ground
1 2	1010 1011	Station 4	115 uR/hr* 75 urem/hr	100 uR/hr # 50 urem/hr	
1 2	1015 1017	Station 5	130 uR/hr 85 urem/hr	145 uR/hr 60 urem/hr	
1 2	1019 1020	Station 6	1200 uR/hr 800 urem/hr	800 uR/hr 400 urem/hr	In pit zone
1 2	1028 1033	Station 7	40 uR/hr 20 urem/hr	44 uR/hr 25 urem/hr	Away from pit area
1 2	1040 1044	Station 8	150 uR/hr 90 urem/hr	140 uR/hr 72 urem/hr	

Table 1. (Continued)

Inst.	Time	Station	Ground	Waist	Comments
1	1055	Station 9	190 uR/hr	170 uR/hr	
2	1057		120 urem/hr	90 urem/hr	
1	1105	Station 10	1250 uR/hr	800 uR/hr	open area
2	1108		750 urem/hr	350 urem/hr	
1	1113	Station 11	400 uR/hr	200 uR/hr	
2	1115		300 urem/hr	150 urem/hr	
1	1118	Station 12	600 uR/hr	500 uR/hr	
2	1120		500 urem/hr	300 urem/hr	
1	1122	Station 13	500 uR/hr	500 uR/hr	
2	1124		250 urem/hr	400 urem/hr	
1	1127	Station 14	600 uR/hr	700 uR/hr	
2	1128		300 urem/hr	300 urem/hr	
1	1134	Station 15	230 uR/hr	280 uR/hr	
2	1136		150 urem/hr	150 urem/hr	
1	1140	Station 16	700 uR/hr	600 uR/hr	
2	1141		300 urem/hr	250 urem/hr	
1	1150	Station 17	80 uR/hr	120 uR/hr	
2	1151		40 urem/hr	35 urem/hr	
1	1155	Station 18	90 uR/hr	65 uR/hr	
2	1156		50 urem/hr	35 urem/hr	

## SAMPLE LOCATIONS, BROWN-VANDEVER MINE SITE

## SECTION 19

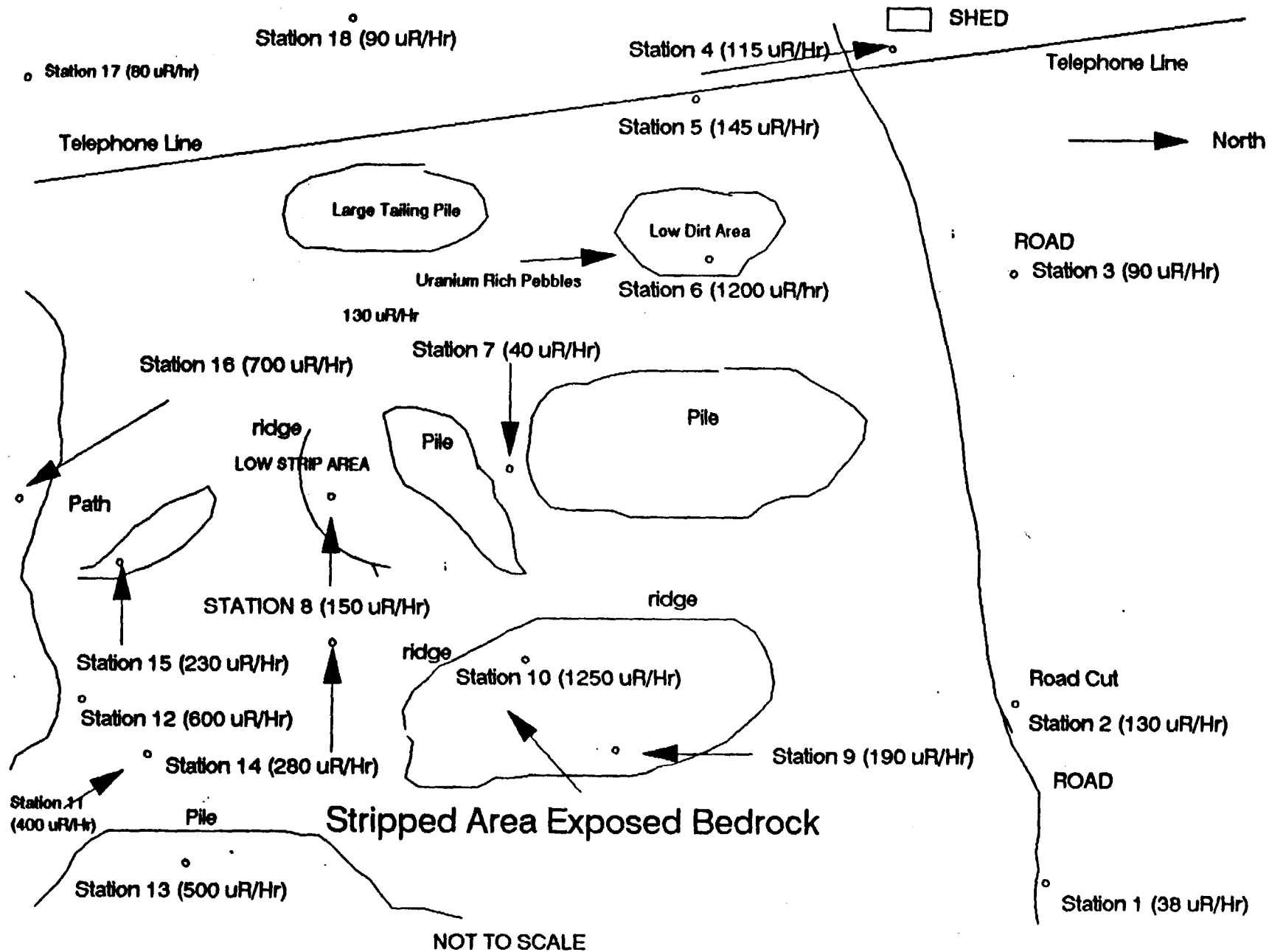


Figure 5. Section 1 B-V.

## Preliminary Index to the Administration Record

<u>AUTHOR</u>	<u>ORGANIZATION AND SUBJECT</u>
1) Patrick Molloy	Navajo Nation Superfund: Preliminary Assessment for the Navajo-Desiderio Group Uranium Mines. April 1, 1990.
2) Patrick Molloy	Navajo Nation Superfund: Preliminary Assessment for the Brown Vandever Uranium Mines. April 6, 1990.
3) Robert Bornstein	U.S. Environmental Protection Agency: Navajo-Brown Vandever and Navajo Desiderio Uranium Mining Areas Preliminary Assessment Workplan. November. 7, 1990.
4) Robert C. Williams	Agency for Toxic Substances and Disease Registry (ATSDR): Public Health Advisory Navajo-Brown Vandever and Navajo Desiderio Uranium Mining Areas. November 21, 1990.
5) Robert Bornstein	U.S. Environmental Protection Agency: The Radionuclide, Metal and Gamma Survey Data Package. January 29, 1991.
6) Sharon Seidel	U.S. Environmental Protection Agency: Navajo Bluewater Site-Preliminary Risk Assessment. May 30, 1991.

### Miscellaneous Documents

- 1) Various Aerial Photographs, USGS Topographical maps, BLM Surface Mineral Management Maps, and BIA Realty Maps.

### Guidance Documents

- 1) Guidance Document: Superfund Removal Procedures #3, OSWER #9360.0-038, 02/01/88.
- 2) Guidance Document: Removal Cost Management Manual (Secondary Reference), OSWER #9360.0-028, 04/01/88.
- 3) Guidance Document: Land Disposal Restrictions, 08/11/87.
- 4) Guidance Document: Emergency Response Cleanup Services Contracts (ERCS), Users' Manual, October 1983, 10/01/83.

- 5) Guidance Document: National Oil & Hazardous Substances Pollution Contingency Guidance, Part 300, 40 CFR CH.1 (7/1/85 Edition), pp. 664 - 755, 07/01/85.
- 6) Guidance Document: Superfund Amendments & Reauthorization Act of 1986 (SARA), 10/17/86.
- 7) Guidance Document: Interim Guidance on Administrative Records for Selection of CERCLA Response Actions, OSWER 9833.3A, 03/01/89.
- 8) Guidance Document: Superfund LDR Guide #7: Determining When Land Disposal Restrictions (LDRs) are "Relevant and Appropriate" to CERCLA Response Actions, OSWER 9347.3-08FS, 12/01/89.
- 9) Technical Assistance Team Report from Preliminary Assessment
- 10) The National Council of Radiation Protection and Measurements (NCRP) Report 91 (1987), "Recommendations on Limits for Exposure to ionizing Radiation."